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ABSTRACT

This paper presents user perspectives on the future of the Internet. The first section discusses understanding users, including the difference between technology service offerings and potential uses, the need for investigation into the relationship between new communications technology and social behavior, and the shift from supply-led development to a demand-led consumer user and citizen participation focus. The second section addresses the Internet user context, including the contrast between the evolution of the Internet and interactivity for commercial television, the extraordinary growth of the Internet, and the emergence of a commercial marketplace for Internet trading. The third section covers smart Internet technology in the future, including programs of the Cooperative Research Centre for Smart Internet Technology and the evolution of new user possibilities, e.g., users will no longer be dependent on the keyboard and mouse; the new system will be able to respond to user preferences for particular information and services via the Internet; there will be constructed individualized information services as useful personalized agents offered over the Internet; it will be possible to use the Internet to provide users with automated information briefings; people will be able to access the Internet from multiple devices with varying capability; and users will be able to take their information with them access the Internet anywhere and any time. (MES)

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# User Perspectives of the Future of the Internet

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# Proceedings

## *User Perspectives of the Future of the Internet*

***Trevor Barr***

So much of the drive in contemporary communications centres on investment in new companies of the 'new economy' and on infrastructure projects for new networks. What is often relegated to a secondary place is any systematic consideration of the end users in this burgeoning new communications environment. Yet this is an era when the user dynamics are being dramatically re-configured.

## UNDERSTANDING USERS

In communications services the value chain for users is changing radically. For much of the twentieth century it was essentially possible to roll out a telephony network and find that access to a telephone service had a natural take up as it progressively became an invaluable social and business instrument. However, the present communications development paradigm has a plethora of information and communications services, of different kinds, requiring difficult judgements about their possible acceptability by users and consumers. The old paradigm of telecommunications development- ' build the networks and they will come,' or the paradigm of computing development - 'there will always be enough users to fill the increasing bandwidth' - are gone.

Now the development of so many innovative communications services requires that organisations who invest in new communications services need to undertake greater investigation of people's needs and greater understanding of the way they run their lives. Participants who wish to offer services need to *understand user perspectives* rather than technology perspectives. As US Federal Communications Commissioner, Andrew Barrett, has explained, ' When I ask telephone people, 'tell me what new services you are talking about', they go into these broad generic terms like telecommuting, telemedicine and distant learning, and I have to remind them that these are not service offerings, they are potential uses of a broadband network.'[i] Providers of technology tend to start from a position of what they do and what they can offer, instead of starting from trying to understand how consumers might want to use technology based services, old and new, in their lives. Dervin explains, 'Almost all our current research applies an observer perspective. We ask users questions which start from our worlds, not theirs: What of the things we can do would you like us to do? What of the things we now offer you do you use?... The difficulty is that the data tell us nothing about humans and what is real to them....'[ii]

So much more systematic investigation is demanded into the relationship between new communications technology and social behaviour than hitherto. Supriya Singh, Senior Research Fellow at CIRCIT, argues that 'instead of information being seen as a commodity that has to be transmitted, information has to be seen as a process of sense making where information is constructed by the user. This changes the questions that are asked. Instead of focussing on the service, the questions focus on the customers' needs.'[iii] In her pioneering research into banking Singh started from a position of looking at the way people manage money in their lives and how this related to technological choices about banking processes. So instead of starting with the construction of a banking network and then trying to get customers onto the network, the starting point was to try to understand peoples' behavioural practices related to money and how these 'mix and match' with technological choices.

Regrettably many of the service providers, actual and potential, in this new information services

market place tend to see this line of argument as 'academic' or lacking commercial reality. On the contrary, however, the successful participants in this new order will be those who understand the social and cultural dimensions of the users in their new businesses.

The fundamental change may be summarized as **the shift from supply led development to a demand led consumer user and citizen participation focus**. There is likely to be a great deal of experimentation with new information and communication services, with plenty of market failures and some successes; eventually a sense of order may emerge around these new services. At the end of the day, however, the only services that will 'work' in the market place are those that are useful and affordable.

## THE INTERNET USER CONTEXT

The Internet is widely regarded as the most significant change to contemporary modes of communications. The Internet's extraordinary growth and the global reach of its platforms, the passion of its adherents and its maze of unresolved issues all qualify it as a paradigm shift in communications.

In the context of the role of the end users in communications the Internet has evolved from entirely different constituencies. It is a medium that has become progressively more interactive than its predecessors. This is a medium of communication that has grown out of a range of different user support bases and their demands for different forms of interactivity. It is insightful to contrast the evolution of the Internet in user terms with historical attempts at interactivity for commercial television.

Let's go back. In the late 1970s the American commercial television networks made substantial network and marketing investments into new forms of interactivity via the television set- eg., home shopping and security systems. Remember the famous QUBE system in Columbus Ohio with its promise that ' you can talk back to your television set?' Essentially this top down marketing approach to create interactive marketing services via the television medium failed commercially. Despite the huge investments from the US commercial television networks consumers switched off in droves, and attempts to change the nature and scope of the medium for its users found no market pull.

Meanwhile the US Defence Department's Advanced Research Projects Agency (DARPA) had initiated a project that eventually came to re-define our sense of interactivity. A communication system emerged with no centre, rather a decentralised, self maintaining series of links between computer networks. In the early stages the computers connected to the Net were situated in US military bases or research centres, and only available to a defence elite who used the system for E-mail transmissions. The early Net was used only by computer experts who had to learn a complex system.

The early 1990s saw academic and public and private sector research bodies playing leading roles in the extraordinary network and software development of the Internet - a system of embedding links in text to other text- and this became the World Wide Web in 1991. This phase also saw the Internet also emerge as a significant alternative or counterculture mode of expression. Micro communities abound on the Net, covering facets of virtually every aspect of human behaviour and curiosity, with people all over the world searching for content and images about religion, politics, gambling, literature, poetry, drugs, sex and pornography. New kinds of grass roots electronic communities have emerged in ways that would never have been possible through established media institutions. These communities of common interest have been the driving force behind the rapid take up of Internet services in a 'bottoms up' process by users which contrasts sharply with the top down history of interactivity with commercial television.

We have witnessed extraordinary growth of the Internet: in 1981 fewer than 300 computers were linked to the Internet; by 1989 the number stood at 90,000; by 1993 over 1,000,0000; and by 1996 an astonishing estimated 9,400,000 host computers world wide were estimated to be linked

to the Internet, 60 % of which were located in the USA, with possibly 40 million people with access around the world.[iv] By July 1997 the number of host computers with registered ip addresses had rocketed to 19,540,000.[v] A September 2000 estimate of the total number of world- wide users with direct access to the Internet is 295 million people- the US with 136.9m and Australia with 7.6m Internet users via home computer.[vi]

With this kind of growth has come the emergence of a commercial market place for Internet trading that remains in a highly fluid state. This era of e- enterprises - e banking , e-shopping, e-education and electronic commerce, presents other new forms of interactivity and creative use of the new medium. Yet the commercial viability of these enterprises remains in question. There are simply no guarantees for investors and suppliers that the emerging on-line services - such as home shopping, home banking, video on demand - indeed the generic category of electronic commerce services, have substantial market pull. And some of the transformations predicted have not yet been realised. As *The Economist* recently argued:

> 'Until recently, the Internet was seen as the making of the media business in the 21st century. It was going to slash costs: media products, unlike most retail goods can be delivered down wires, so the Internet would eliminate the need for factories and distribution networks. It was going to boost revenues, previously inaccessible markets would become reachable and data collection would make advertising more valuable. And it was going to lower barriers to entry, generating a crop of healthy new companies. But the Internet has not lived up to these hopes.'[vii]

The fundamental reasons behind this current overall failure of major commercial uptake appear to again reside in complex behavioural factors, notably perceptions of trust and issues related to privacy. The jury is out on whether the traditions of this medium of virtualism and common interest will give way fundamentally to commercial capture.

## SMART INTERNET TECHNOLOGY IN THE FUTURE

In the next few years the likely exponential growth of Internet services will make substantial demands on understanding and managing the complexity that will arise from both the explosion of both the number of connected devices and the volume of information available.

It is critical, however, that these new enabling technologies meet the needs of people, are useful, flexible, readily accessible and affordable. We need a great deal more qualitative research into the nature of Internet communities. Generally speaking research about Internet communities has been a methodological extension of the system used for commercial television ratings, based on the volume of users, market shares and consumption patterns. There is an urgent need for different kinds of research about Internet communities. Questions that have not been systematically researched are about what motivates people to go onto the Net and their sense of expectation of what it might be able to provide. We need to try to find out what people want the Internet to be in the next few years.

In this context a major research innovation under way in Australia is coming from a group of people who have constructed a bid for a Cooperative Research Centre for Smart Internet Technology. The bid involves 8 Universities in four states, several government agencies, a consortium of small and medium enterprises (SMEs), and six major corporations - Adacel, CSC, Hewlett Packard, Motorola, Nortel Networks, and Telstra. The CRC for Smart Internet Technology aims to research and develop a scalable, robust Internet that is 'smart' in assisting its 'users.' The specific objectives are: to provide technologies for high-value Internet-based international products; to lower Internet technology deployment costs; to integrate technological and social/ behavioural research in efficient and effective programs; to produce knowledgeable, skilled and enterprising IT professionals; and to commercially advance Australian industry, SMEs and start up companies.

The Research Program of the CRC for Smart Internet Technology has been structured into 5 core programs each of which will address an architectural component of the future Internet: "Smart

Networks", "Intelligent Environments", "Smart Personal Assistant", "Adaptive Natural User Interface" and "User Environment". The common theme of these research programs is that the Internet as a network is likely to become more complicated to manage in the future, both from the user's point of view and the network manager's. So assuming the exponential growth of the Internet continues the likely course of the next Internet generation is an explosion in the number of connected devices, a dramatic increase in traffic and ever burgeoning amounts of information. Fundamental research is required to get beyond the kind of common media coverage that's around - like busy office workers will be able to send cooking commands to their net enabled microwave ovens to have dinner cooked by the time they get home.

The research projects will work towards the evolution of new user possibilities, technologically and functionally, for the Internet in ten years time. These might be that:

1. Users will no longer be dependent on using the key board and the mouse with their interaction but may be able to draw upon richer modes of human communication.
2. The new system will be able to record and respond to user preferences for particular information and services via the Internet.
3. There will be constructed individualised information services as useful personalised agents offered over the Net.
4. It will be possible to use the Internet to provided users with automated information briefings that ought of be helpful to them.
5. People will be able to access the Net from multiple devices with varying capability ie., a device independent Internet.
6. Users will be able to take their information and documentation with them anywhere, any time, any place and be able to access the Internet.

So users ought to get better functionality, enhanced services and access to an intelligent communications technology to help them run their lives. This seven year CRC research program , involving several hundred researchers around Australia has a considerable task before it!

In all of this we must remember - the question is not only what the technology is going to be like, but what *we* are going to be like.

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## Footnotes

**i** Quoted in Kyrish, S, 'Public Policy and the cycle of prediction,' BTCE Conference, Melbourne, 1996 p 11

**ii** Dervin, B and Dewdney, P, 'Neutral Questioning: A New Approach to the reference interview', *RQ*, 25 (4), 1986, p 506-

**iii** Supriya Singh, 'Communication and Information Technologies,' Paper, CIRCIT, 11-8-95

**iv** American Civil Liberties paper. See www.aclu.org/court/cdadec.html , p5.

**v** Robert Hobbes' Zakon, 'Hobbes' Internet timeline,' The Mitre Corporation, 31-12-98, p14

**vi** www.nielson-net ratings.com/ accessed on 12/9/00

**vii** The Economist, 19-87-00, p 59

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